

Remarks

I. Status of claims

Claims 15-22 were pending.

Claims 23-34 have been added.

II. Objections to the specification

The specification has been amended to correct the computer-format-conversion errors noted by the Examiner.

The Examiner's objections to the specification now should be withdrawn.

III. Claim rejections under 35 U.S.C. § 102

A. Claim rejections over Curry

The Examiner has rejected claims 15-17 and 19 under 35 U.S.C. § 102(b) over Curry (U.S. 5,710,636).

Claim 15 is an independent claim and each of claims 16, 17, and 19 depends from claim 15.

Claim 15 has been amended and now recites that at least one $K \times K$ image matrix is converted to a respective $K \times K$ barcode matrix corresponding to a symbol in the message and contained in one of multiple predetermined barcode matrix sets selected based on pixel values in the $K \times K$ image matrix being converted, wherein each barcode matrix set includes a respective barcode matrix for each possible symbol in the message, and barcode matrices in different sets encoding a common message symbol have different respective spatial patterns of dots selected from a set of different color dots.

In FIGS. 2A-2C, Curry shows three different sets of halftone cells. Curry, however, does not select which of these halftone cell sets to use in encoding the input image sample based on pixel values in the input image sample, as now recited in claim 15. Rather, Curry selects the halftone cell sets from which to pick a halftone cell to use in encoding the input

image sample based on the corresponding bitmap code used to create the human-readable pattern that is to be formed in the resulting halftone image.

In addition, Curry indicates that the “tone of the halftone image is controlled by selectively varying the thickness of the dot patterns 26 within the halftone cells 20, 22 and 24” (col. 4, lines 24-26). Thus, in Curry’s approach, halftone cells 20, 22, and 24 with different dot pattern thicknesses encode the same message symbol. For example, halftone cells with the same spatial pattern of the halftone cell 20 on the left-hand side of FIG. 2A, but with different respective dot pattern thicknesses, all encode the same value (i.e., the same human-readable shape and the same machine-readable code value). However, by design these halftone cells, which vary by dot pattern thickness alone, do not have different respective spatial patterns of dots; i.e., the spatial patterns of the dots are the same, only the dot pattern thicknesses differ. Therefore, the sets of Curry’s halftone cells that vary by dot pattern thickness alone do not correspond to the multiple sets of barcode matrices now recited in claim 15

For at least these reasons, the Examiner’s rejection of claim 15 under 35 U.S.C. § 102(b) over Curry now should be withdrawn.

Each of claims 16, 17, and 19 incorporates the features of independent claim 15 and therefore is patentable over Curry for at least the same reasons.

B. Claim rejections over Cass

The Examiner has rejected claims 15-17 and 20-21 under 35 U.S.C. § 102(e) over Cass (U.S. 5,946,414).

1. Claims 15-17

Claim 15 is an independent claim, and claims 16 and 17 depend from claim 15.

Cass does not convert an image region to a respective barcode matrix contained in one of multiple predetermined bar code matrix sets selected based on pixel values in the image region, as now recited in claim 15. Cass discloses multiple sets of signal blocks, such as the signal block set of FIG. 2 and the signal block set of FIG. 13, but Cass does not teach or suggest that the encoded image 80 is generated from a signal block contained in a signal

block set selected from multiple signal block sets; nor does Cass teach or suggest that the signal block set used to encode an image region is selected based on pixel values in the image region. Instead, Cass merely teaches embodiments in which only a single respective signal block set is used to encode the carrier image 40 in any given encoding session.

In addition, Cass does not convert an image region to a respective signal block contained in a predetermined signal block set. Indeed, the signal blocks are not defined until after Cass determines the color of a given image region to be encoded. In particular, first Cass must modulate the colors in a signal block according to the color of the image region, then Cass converts the image region to the color-modulated signal block. The color-modulated signal block, however, is not contained in a predetermined signal block set.

For at least these reasons, the Examiner's rejection of claim 15 under 35 U.S.C. § 102(e) over Cass now should be withdrawn.

Each of claims 16 and 17 incorporate the features of independent claim 15 and therefore is patentable over Cass for at least the same reasons.

2. Claims 20 and 21

Claim 20 is an independent claim, and claim 21 depends from claim 20.

Claim 20 recites that a partitioned sub-region of a barcode image is compared with a set of L possible barcode matrices. Cass, however, does not even hint that a region of the acquired color image is compared with a set of signal blocks, such as the signal block set of FIG. 2 and the signal block set of FIG. 13. Instead, by design, Cass first must remove the average color from an acquired color image region before a correlation between the acquired color image region and the signal blocks may be determined. That is, Cass only compares signal blocks to substantially modified, color-modulated regions of the acquired color image; the signal blocks are not compared to the acquired color image regions themselves or substantially equivalents thereof.

For at least this reason, the Examiner's rejection of claim 20 under 35 U.S.C. § 102(e) over Cass now should be withdrawn.

Claim 21 incorporates the features of independent claim 20 and therefore is patentable over Cass for at least the same reasons.

IV. Claim rejections under 35 U.S.C. § 103

The Examiner has rejected claims 18 and 22 under 35 U.S.C. § 103(a) over Cass in view of Rhoads (U.S. 6,345,104).

Claim 18 incorporates the features of independent claim 15, and claim 22 incorporates the features of independent claim 20. The Examiner has cited Rhoads merely for his teaching of the use of calibration blocks that facilitate registration of watermark cells during decoding of a digital watermark. Rhoads, however, does not make-up for the failure of Cass to teach or suggest the aspects of independent claims 15 and 20 discussed above.

Therefore, claims 18 and 22 are patentable over Cass and Rhoads for at least the same reasons explained above.

V. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: July 12, 2004



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